abcam

ab76495

Anti-Thymidine Kinase 1/TK1 antibody [EPR3193]

Recombinant | RabMAb | KO Validated | 20ul selling size

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.2 - 7.4 Preservative: 0.01% Sodium azide Constituents: PBS, 40% Glycerol (glycerin, glycerine), 0.05% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Clone number	EPR3193
Purification technique	Affinity purification Protein A
Concentration	0.17 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IP

Tested

Species	Human
Dilution info	1/20
Notes	-

WB

Tested

Species	Human
Dilution info	1/1000
Notes	**For unpurified use at 1/5000 - 1/50000**

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/200
Notes	For unpurified use at 1/70 ab172730 - Rabbit monoclonal IgG, is suitable for use as an isotype control with this antibody.

IHC-P

Tested

Species	Human
Dilution info	1/100 - 1/250
Notes	Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

Target data

See full target information TK1

Function Cell-cycle-regulated enzyme of importance in nucleotide metabolism (PubMed:9575153). Catalyzes the first enzymatic step in the salvage pathway converting thymidine into thymidine monophosphate (PubMed:22385435). Transcriptional regulation limits expression to the S phase of the cell cycle and transient expression coincides with the oscillation in the intracellular dTTP concentration (Probable). Also important for the activation of anticancer and antiviral nucleoside analog prodrugs such as 1-b-d-arabinofuranosylcytosine (AraC) and 3c-azido-3c-deoxythymidine (AZT) (PubMed:22385435).

Storage

Shipped at conditions Conditional Ambient

Appropriate short-term storage duration	1-2 weeks
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C
Aliquoting information	Upon delivery aliquot
Storage information	Avoid freeze / thaw cycle

Notes

Species reactivity
Mouse, Rat: We have preliminary internal testing data to indicate this antibody may not react with these species. Please contact us for more information.

Patented technology
Our RabMAb® technology is a patented hybridoma-based technology for making rabbit monoclonal antibodies. For details on our patents, please refer to RabMAb® patents.

What are the advantages of a recombinant monoclonal antibody?
This product is a recombinant monoclonal antibody, which offers several advantages including:

- High batch-to-batch consistency and reproducibility
- Improved sensitivity and specificity
- Long-term security of supply
- Animal-free batch production

For more information, read more on recombinant antibodies.

Supplementary info

This supplementary information is collated from multiple sources and compiled automatically.

Activity summary	Thymidine Kinase 1 (TK1) also known as Thymidine Kinase isoform A is an enzyme involved in the phosphorylation of thymidine into thymidine monophosphate an important component in DNA synthesis. TK1 has a molecular weight of approximately 25 kDa. It is predominantly expressed in proliferating cells with expression levels peaking during the S phase of the cell cycle. You often find TK1 in tissues with high cell division rates like bone marrow and lymphatic tissues.
Biological function summary	This enzyme is critical for DNA replication and repair by providing deoxythymidine triphosphate (dTTP) a deoxynucleoside triphosphate. TK1 operates as a monomer but can form a tetrameric complex in its active state which enhances its affinity for substrates. TK1 can process various substrates including thymidine and thymidine analogs such as 5-bromo-2'-deoxyuridine (BrdU) and EdU. These substrates are

	vital in molecular biology as they help in measuring DNA synthesis in cell proliferation studies.
Pathways	The function of TK1 is central to the salvage pathway of nucleotide synthesis. This pathway allows recycling of thymidine from degraded DNA which is particularly important for rapidly dividing cells that need to ensure a sufficient supply of nucleotides. TK1 acts alongside other enzymes such as thymidylate synthase and ribonucleotide reductase to maintain nucleotide balance within the cell ensuring proper DNA synthesis and cellular proliferation.
Associated diseases and disorders	TK1 levels often increase in cancerous tissues due to their elevated cell proliferation rates. Serum TK1 is a biomarker for various cancers like leukemia and breast cancer. Studies show a correlation between high TK1 activity and tumor aggressiveness and progression. Additionally interactions of TK1 with the protein p53 a tumor suppressor show that defects in TK1 regulation can contribute to genomic instability highlighting its role in oncogenesis.

Product promise

Tested

We have tested this species and application combination and it works. It is covered by our product promise.

Expected

We have not tested this specific species and application combination in-house, but expect it will work. It is covered by our product promise.

Predicted

This species and application combination has not been tested, but we predict it will work based on strong homology. However, this combination is not covered by our product promise.

Not recommended

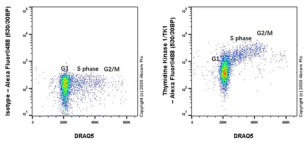
We do not recommend this combination. It is not covered by our product promise.

We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

In the unlikely event of one of our products not working as expected, you are covered by our product promise.

Full details and terms and conditions can be found here:
Terms & Conditions.

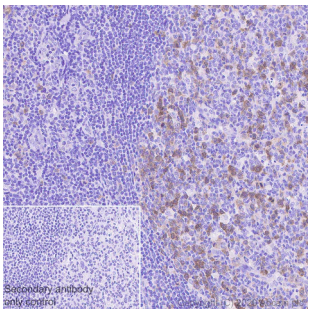
6 product images



Flow Cytometry (Intracellular) - Anti-Thymidine Kinase 1/TK1 antibody [EPR3193] (ab76495)

Thymidine Kinase 1/TK1 Flow Cytometry (Intracellular) staining using rabbit Anti-Thymidine Kinase 1/TK1 antibody

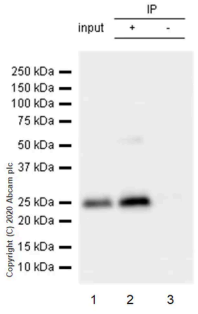
Intracellular Flow Cytometry analysis of HeLa (Human cervix adenocarcinoma epithelial cell) cells labeling Thymidine Kinase 1/TK1 with Purified ab76495 at 1/200 dilution (0.1 µg/ml) (Red). Cells were fixed with 4% Paraformaldehyde and permeabilised with 90% Methanol. A Goat anti rabbit IgG (Alexa Fluor® 488 ,ab150077) secondary antibody was used at 1/2000. Isotype control - Rabbit monoclonal IgG (Left). Unlabeled control - /.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Thymidine Kinase 1/TK1 antibody [EPR3193] (ab76495)

Thymidine Kinase 1/TK1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-Thymidine Kinase 1/TK1 antibody

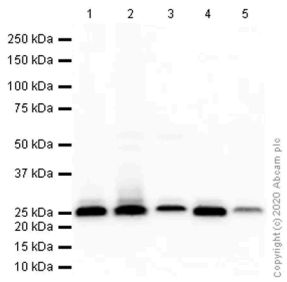
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of Human tonsil tissue sections labeling Thymidine Kinase 1/TK1 with purified ab76495 at 1/200 dilution (0.85 µg/mL). Heat mediated antigen retrieval using Bond™ Epitope Retrieval Solution 2 (pH 9.0). The immunostaining was performed on a Leica Biosystems BOND® RX instrument. Rabbit specific IHC polymer detection kit HRP/DAB (ab209101) was used as the secondary antibody. Negative control: PBS instead of the primary antibody. Hematoxylin was used as a counterstain.



Immunoprecipitation - Anti-Thymidine Kinase 1/TK1 antibody [EPR3193] (ab76495)

Purified ab76495 at 1/20 dilution (0.8µg) immunoprecipitating Thymidine Kinase 1/TK1 in MOLT-4 whole cell lysate.
Lane 1 (input): MOLT-4 (Human lymphoblastic leukemia T lymphoblast)
Lane 2 (+): ab76495 + MOLT-4 whole cell lysate.
Lane 3 (-): Rabbit monoclonal IgG (ab172730) instead of ab76495 in MOLT-4 whole cell lysate.
VeriBlot for IP Detection Reagent (HRP) (ab131366) (1/1000 dilution) was used for Western blotting.
Blocking Buffer and concentration: 5% NFDM/TBST.
Diluting buffer and concentration: 5% NFDM/TBST.
Observed band size: 24 kDa
All lanes:
Immunoprecipitation - Anti-Thymidine Kinase 1/TK1 antibody [EPR3193] (ab76495)

Predicted band size: 25 kDa



Western blot - Anti-Thymidine Kinase 1/TK1 antibody [EPR3193] (ab76495)

Thymidine Kinase 1/TK1 Western blot staining using rabbit Anti-Thymidine Kinase 1/TK1 antibody

All lanes:
Western blot - Anti-Thymidine Kinase 1/TK1 antibody [EPR3193] (ab76495) at 1/1000 dilution

Lane 1:

MOLT-4 (Human lymphoblastic leukemia T lymphoblast) whole cell lysate at 20 µg

Lane 2:
U-2 OS (Human bone osteosarcoma epithelial cell) whole cell lysate at 20 µg

Lane 3:
SW620 (Human colorectal adenocarcinoma epithelial cell) whole cell lysate at 20 µg

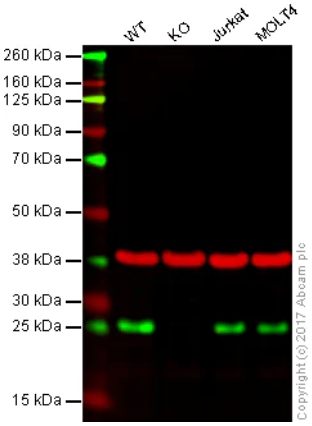
Lane 4:
Jurkat (Human T cell leukemia T lymphocyte) whole cell lysate at 20 µg

Lane 5:
Human tonsil lysate at 20 µg

Secondary

All lanes:
Goat Anti-Rabbit IgG (HRP) with minimal cross-reactivity with human IgG at 1/2000 dilution

Predicted band size: 25 kDa



Western blot - Anti-Thymidine Kinase 1/TK1 antibody [EPR3193] (ab76495)

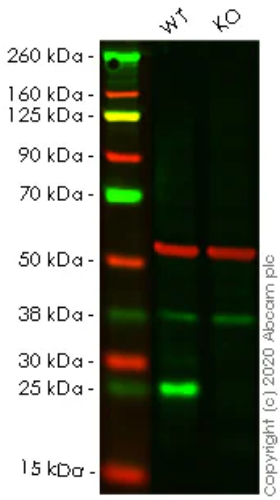
Thymidine Kinase 1/TK1 Western blot staining using rabbit Anti-Thymidine Kinase 1/TK1 antibody

Lane 1: Wild-type HAP1 whole cell lysate (20 µg)
Lane 2: TK1 knockout HAP1 whole cell lysate (20 µg)
Lane 3: Jurkat whole cell lysate (20 µg)
Lane 4: MOLT4 whole cell lysate (20 µg)
Lanes 1 - 4: Merged signal (red and green). Green - ab76495 observed at 25 kDa. Red - loading control, ab8245, observed at 37 kDa.

ab76495 was shown to specifically react with TK1 in wildtype HAP1 cells. No band was observed when TK1 knockout samples were examined. Wild-type and TK1 knockout samples were subjected to SDS-PAGE. ab76495 and ab8245 (Mouse anti GAPDH loading control) were incubated overnight at 4°C at 1/5000 dilution and 1/10,000 dilution respectively. Blots were developed with Goat anti-Rabbit IgG H&L (IRDye® 800CW) preabsorbed ab216773 and Goat anti-Mouse IgG H&L (IRDye® 680RD) preabsorbed ab216776 secondary antibodies at 1/20,000 dilution for 1 hour at room temperature before imaging.

All lanes:
Western blot - Anti-Thymidine Kinase 1/TK1 antibody [EPR3193] (ab76495)

Predicted band size: 25 kDa



Western blot - Anti-Thymidine Kinase 1/TK1 antibody [EPR3193] (ab76495)

Thymidine Kinase 1/TK1 Western blot staining using rabbit Anti-Thymidine Kinase 1/TK1 antibody

Lanes 1- 2: Merged signal (red and green). Green - ab76495 observed at 25 kDa. Red - Anti-alpha Tubulin antibody [DM1A] - Loading Control (ab7291) observed at 50 kDa.
ab76495 was shown to react with Thymidine Kinase 1/TK1 in wild-type HEK-293T cells in western blot. Loss of signal was observed when knockout cell line ab266230 (knockout cell lysate ab257745) was used. Wild-type HEK-293T and TK1 knockout HEK-293T cell lysates were subjected to SDS-PAGE. Membrane was blocked for 1 hour at room temperature in 0.1% TBST with 3% non-fat dried milk. ab76495 and Anti-alpha Tubulin antibody [DM1A] - Loading Control (ab7291) overnight at 4°C at a 1 in 1000 dilution and a 1 in 20000 dilution respectively. Blots were developed with Goat anti-Rabbit IgG H&L (IRDye®800CW) preadsorbed (ab216773) and Goat anti-Mouse IgG H&L (IRDye®680RD) preadsorbed (ab216776) secondary antibodies at 1 in 20000 dilution for 1 hour at room temperature before imaging.

All lanes:
Western blot - Anti-Thymidine Kinase 1/TK1 antibody [EPR3193] (ab76495) at 1/1000 dilution

Lane 1:
Wild-type HEK-293T cell lysate at 20 µg

Lane 2:
TK1 knockout HEK-293T cell lysate at 20 µg

Lane 2:
Western blot - Human TK1 (Thymidine Kinase 1) knockout HEK-293T cell line (ab266230)

Performed under reducing conditions.

Predicted band size: 21 kDa, 25 kDa

Observed band size: 21 kDa, 25 kDa

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.